

REMARKS

Reconsideration and allowance of the subject application are respectfully requested. By this Amendment, Applicant has canceled claim 14. Thus, claims 1-13 are pending in the application with claims 6-13 withdrawn from consideration as being directed to a non-elected invention. Applicant respectfully submits that the pending claims define patentable subject matter.

I. Rejection under 35 U.S.C. § 112, first paragraph

Claims 1 and 14 are rejected under 35 U.S.C. § 112, first paragraph, as allegedly failing to comply with the written description requirement. Although Applicant does not agree with the Examiner's position, Applicant has amended claim 1 to remove the objectionable claim language and canceled claim 14 since these features are not necessary to distinguish the claimed invention from the cited references. Accordingly, the Examiner is requested to remove the § 112, first paragraph, rejection.

II. Prior Art Rejections

Claims 1 and 14 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Kusase et al. (USP 6,181,043; hereafter "Kusase") in view of Honda (JP 59-123438) Umeda et al. (USP 6,124,660; hereafter "Umeda") and Ebata et al. (USP 4,529,459; hereafter "Ebata"). Claims 2 and 3 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Kusase in view of Honda, Umeda, Ebata and Baines (USP 4,705,972). Claims 4 and 5 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Kusase in view of Honda, Umeda, Ebata, Baines and Seki et

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al. (USP 5,698,929). Applicant respectfully submits that the claimed invention would not have been rendered obvious in view of the cited references.

As shown in Figures 13-16, Kusase discloses a stator winding wherein end portions 433d of copper conductor segments are joined at a connected portion 433f which is ball-shaped (i.e., a liquid drop, a raindrop, or a flat ball) and has a smooth roundish surface. The connected portion 433f covers the edge and side surfaces of end portion 433d, thereby covering all sharp corner edges. The connected portion 433f is formed by dipping the end portions 433d in a tank 440 of melted solder 430. The end portion 433d is then taken out to coat the melted solder 430 on the end portions 433d.

Honda discloses a water cooled rotor wherein pole portions of water cooled rotor windings composed of hollow copper strip through which cooling water can flow are connected by an interpole connecting member composed of hollow copper strip in such a manner that the hollow part of each connected portion becomes continuous. As shown in Figure 3, ends of a interpole connecting member 7 formed by a Y-shaped hollow conductor are connected to an end of a hollow winding 8a, an end of a hollow winding 9a and an end of a hollow winding 9b, respectively, by TIG welding or silver soldering.

As shown in Figure 7, Umeda discloses that ends 61d of aluminum conductor segments 61 are welded together to form a welded portion 61e (i.e., the ends of the aluminum conductor segments are heated until the ends of the conductor segments flow together) at the portion where the ends 61d are adjacent to each other. Thus, Umeda teaches that the ends 61d of the aluminum conductor segments 61 are directly joined together by welding without the use of an

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additional joining material such as a metal having a melting point which is lower than a melting point of the conductor segments 61.

As the Examiner correctly concedes, Kusase, Honda and Umeda do not disclose a stator winding comprising a plurality of conductors including end portions joined to each other by a metal interposed between the end portions. In view of the deficiencies of these references, the Examiner cites Ebata for disclosing joining oxide type ceramic articles by heating an adhesive agent interposed between opposed surfaces of the ceramic articles, and asserts that it would have been obvious to modify the combination of Kusase, Honda and Umeda “to have a metal interposed between joined portions for the purpose of joining two oxide materials to each other with high adhesive strength.”

Applicant respectfully submits that one of ordinary skill in the art would not have been motivated to modify the connection (joint) portions of Kusase so that the metal joining the end portions of the conductors is interposed between the end portions based on the teachings of Ebata (or the other cited references) because Ebata is directed to an adhesive agent for joining ceramic articles rather than metal conductor segments (i.e., copper) forming a stator winding. That is, one of ordinary skill in the art would not look to the art of adhesive agents for bonding ceramic materials, such as Ebata, for teachings relevant to joining metal conductor segments of a stator winding. “In order to rely on a reference as a basis for rejection of an applicant’s invention, the reference must either be in the field of applicant’s endeavor or, if not, then be reasonably pertinent to the particular problem with which the inventor was concerned.” *In re Oetiker*, 977 F.2d 1443, 1146, 24 USPQ2d 1443, 1445 (Fed. Cir. 1992). In the present case, Applicant respectfully submits that it is quite clear that Ebata’s teachings are not in the field of applicant’s

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endeavor (i.e., forming a stator winding for a dynamo-electric machine) or reasonably pertinent to the particular problem with which the inventor was concerned (i.e., reducing the amount of heat required for joining the conductor segments). Further, the mere fact that Ebata discloses an adhesive agent can be interposed between ceramic articles to bond the ceramic articles together does not provide any motivation or suggestion which would lead one of ordinary skill in the art to modify Kusase's teachings, i.e., dipping metal conductor segments of a stator winding in a tank of molten solder, to produce the claimed invention.

In the Advisory Action dated September 3, 2004, the Examiner states that "the references are related in very similar fields such as electrical machines and soldering materials and methods." However, Applicant respectfully submits that it is quite clear that Ebata is directed to a field which completely different and unrelated to that of Kusase, Umeda and Honda. That is, as discussed above Ebata is directed to an adhesive for bonding ceramic articles while Kusase and Umeda are directed to alternators (AC current generators) and Honda is directed to a water cooled rotor.

Applicant further submits that one of ordinary skill in the art would not have been motivated to modify Kusase's stator based on Ebata's teachings with regard to the disclosed adhesive agent due to the particular properties and bonding requirements of the adhesive agent. Ebata teaches that since the adhesive agent contains copper sulfide, the adhesive agent must be heated to a temperature of at least 1000° C, preferably 1050° C to 1200° C (in Examples 1-5 of Ebata, the adhesive agent is heated to 1100° C) for a period of 10 to 60 minutes in order to ensure adhesion strength. However, the copper conductor segments of Kusase assumedly have a melting point of 1060° C (i.e., the melting point of copper) such that dipping the copper

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conductor segments in a tank containing Ebata's heated adhesive agent would likely melt the copper conductor segments.² Further, since Ebata's adhesive agent must be heated for 10 to 60 minutes, one of ordinary skill in the art would not have been motivated to join the numerous conductor segments forming the stator winding by interposing the disclosed adhesive agent between the pairs of conductor segments to be joined and heating the adhesive agent for the requisite time period since such a process would be prohibitively time consuming (i.e., very inefficient).

In addition, one of ordinary skill in the art would not have been motivated to modify the connection (joint) portions of Kusase so that the metal joining the end portions of the conductors is interposed between the end portions because (1) Kusase teaches away from this feature of the present invention, and (2) such modification would impermissibly change the principle of operation of Kusase's connection portions.³ That is, the stated objective of Kusase is to eliminate the sharp edges of the joined end portions of the conductor segments because the sharp edges may cause concentration of mechanical stress and electrochemical stress, and facilitate accumulation of dust or foreign particles.⁴ Thus, modifying the connection portions of Kusase so

² Likewise, if Kusase's copper conductor segments are replaced by aluminum conductor segments as disclosed by Umeda, the aluminum conductor segments would also melt (i.e., aluminum has a melting point of 648° C).

³ As set forth in MPEP 2143.01, if the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959).

⁴ All of the embodiments disclosed by Kusase are directed to ball-shaped connection portions which cover the sharp corner edges and side surfaces of the end portions of the conductor segments.

that the metal joining the end portions of the conductor segments is interposed between the end portions (instead of dipping the conductor segments in a tank of molten solder so as to form a ball-shaped connected portion cover the outer surfaces and edges of the conductor segments) would completely defeat the stated objectives of Kusase's teachings and change the principle of operation of the disclosed structure of the connection portions.

Lastly, even if one of skill in the art would have been motivated to modify the teachings of Kusase based on Ebata, which Applicant submits is incorrect, the modification would simply result in replacing the molten solder with the heated adhesive agent of Ebata and dipping the adjacent conductor segments in the heated adhesive agent such that the joined conductor segments would still not have an metal interposed therebetween as required by the claims.⁵

Accordingly, Applicant respectfully submits that claims 1-5 and 14 should be allowable because the cited references do not teach or suggest all of the features of the claims and one of ordinary skill in the art would not have been motivated to combine and modify the cited references to produce the claimed invention.

III. Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the

⁵ As shown in Figure 16 of Kusase, the end portions 433d of the conductor segments are contacted together and then dipped in the molten solder 430 such that the solder 430 forms a ball-shaped connected portion 433f surrounding the outer edge and side surfaces of the end portions 433d without being interposed between the end portions 433d.

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Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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